Conservation of Arctic Flora and Fauna

CIRCUMPOLAR SEABIRD GROUP
CAFF

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September 2008

INTERNATIONAL IVORY GULL CONSERVATION STRATEGY AND ACTION PLAN

CAFFs CIRCUMPOLAR SEABIRD GROUP

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International Ivory Gull Conservation Strategy and Action Plan

Prepared by

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on behalf of the

CIRCUMPOLAR SEABIRD GROUP (CBird)

CAFF Technical Report No. 18
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Executive Summary

The Ivory Gull Pagophila eburnea is a high Arctic seabird which is often associated with sea ice throughout the year. In spite of an early discovery by Jonas Poole in 1609, it still remains one of the most poorly known seabird species in the world. The Ivory Gull breeds at high latitudes in the Atlantic sector of the Arctic. Small, scattered colonies occur in Arctic Canada, Greenland, Svalbard (Norway), and the northern islands of Russia in the Barents and Kara seas. The wintering distribution of the Ivory Gull is poorly known, although it generally winters along the southern edge of Arctic pack ice in the waters of the North Atlantic Ocean (Davis Strait and Labrador, Greenland and Barents seas), and the North Pacific Ocean (Bering Sea, Sea of Okhotsk, and perhaps the Beaufort and Chukchi seas).

There is growing concern in the circumpolar Arctic that the Ivory Gull may be in decline. The most recent information on population trend of Ivory Gulls exists for Canada, Svalbard and Russia. In Canada, the Ivory Gull has a highly restricted range, breeding exclusively in Nunavut Territory. Until recently, the Canadian Arctic was thought to support 20-30% of the entire global breeding population, and colonies of continental and global importance. However, aerial surveys conducted in 2002-2006 suggest that the Canadian breeding population has declined by 80-85% since the early 1980s. Recent surveys in Svalbard suggest that only a few of the known colonies are still being used there and that the total population is smaller than previously estimated. Information obtained currently on Russian breeding grounds indicate stable populations breeding at some key colonies, although considerable annual fluctuations in numbers of breeding birds occurs.

Despite wintering in association with pack ice in the north Pacific and Atlantic oceans, and its remote breeding locations, there are several threats to Ivory Gulls regionally and globally. These include climate change that is known to be altering ice conditions in the circumpolar Arctic, toxic pollutants that bio-accumulate at high trophic levels, shooting, possible oiling at sea and geological mineral explorations (particularly in Canada and Russia).

Andrey Rykovanov

The Ivory Gull has been protected in West Greenland since 1977 under the Greenland Home Rule Order of 5 May 1988 concerning the protection of birds in Greenland. In Svalbard, it has been protected since 1978, under the Svalbard Environmental Protection Act. In Russia, it was listed in the Red Data Book of the USSR (1984) and now is registered as a Category 3 (Rare) species in the Red Data Book of the Russian Federation according to the Decree of State Committee of Russian Federation for Environmental Protection of 1997. Consequently, the Ivory Gull is listed in regional Red Data Books along its breeding range in Russia. In Canada, the Ivory Gull is a non-game species, and as such is protected in North America under the Migratory Birds Convention Act and related Migratory Bird Regulations. It is currently being up-listed to the status of Endangered Species. The Ivory Gulls has also been up-listed to Near Threatened (NT) in The World Conservation Union IUCN list in 2005.

The goal of this strategy and action plan is: To facilitate circumpolar implementation of initiatives to conserve and protect the Ivory Gull in the circumpolar Arctic. To achieve this goal, twenty specific action items are set out in the context of the following general objectives:

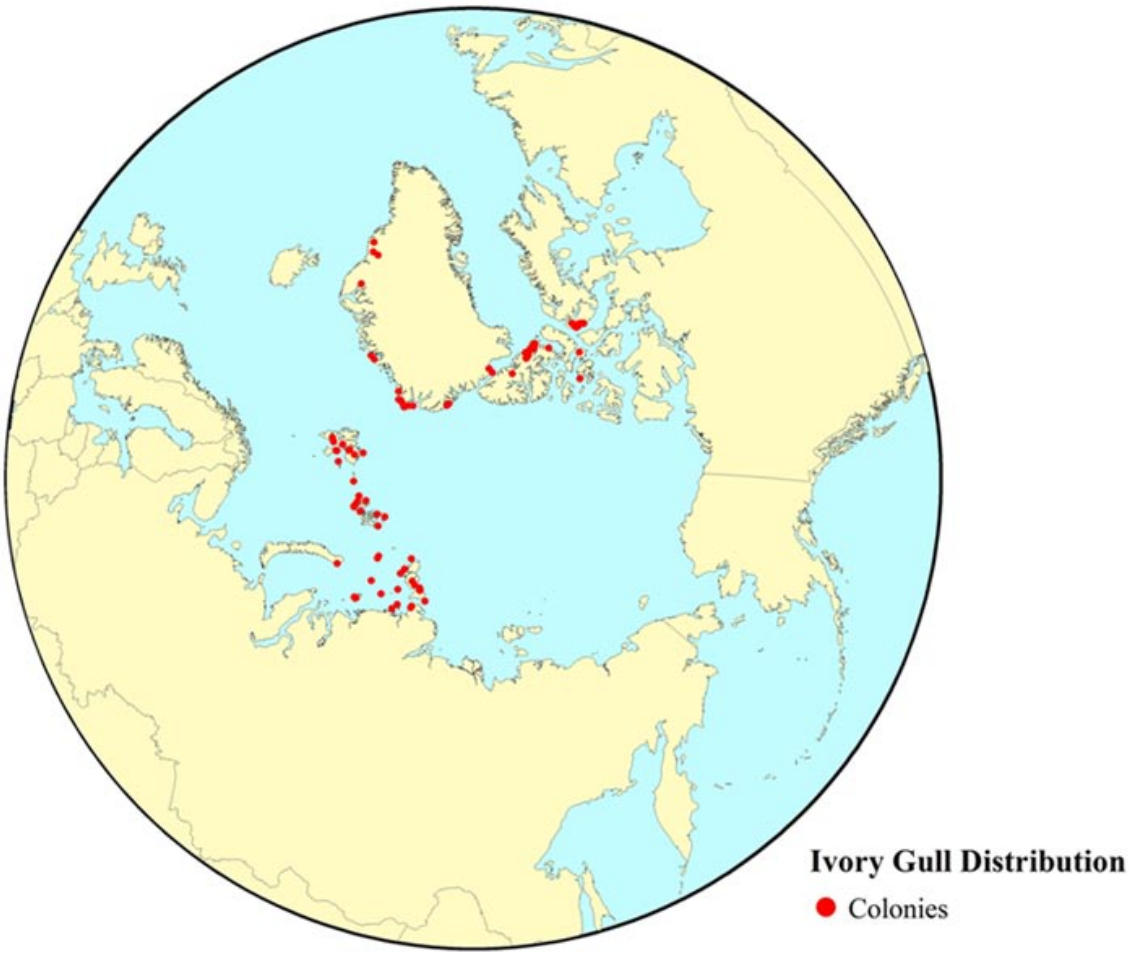
Ensure that non-consumptive uses of Ivory Gulls do not threaten their populations

Minimize adverse effects on Ivory Gulls by commercial activities.

Protect key habitat to ensure continued viability of the Ivory Gull populations that depend on them

Ensure proper coordination with existing and planned conservation programs , and encourage awareness of this Ivory Gull Strategy and broad participation in its implementation.

Provide reliable information about Ivory Gulls that is needed to implement the Strategy and conserve the species globally.



Map 1: The distribution of known breeding colonies of Ivory Gull Pagophila eburnean within the Arctic.

Chapter 1: Introduction

The Ivory Gull Pagophila eburnea is a high Arctic seabird which is associated with sea ice all year round (Haney & MacDonald 1995). In spite of an early discovery by Jonas Poole in 1609 (Poole 1610), it still remains one of the most poorly known seabird species in the world (Haney & MacDonald 1995). The Ivory Gull breeds patchily in northern Canada, Greenland, Norway (Svalbard) and Russia (Blomquist & Elander 1981). The global breeding population has been estimated at 14 000 pairs (Volkov & de Korte 1996). Due to its sparse occurrence and inaccessibility, very few studies of the Ivory Gull have been carried out (i.e. Bateson & Plowright 1959, Volkov & de Korte 2000). There is therefore very limited knowledge of its ecology (Tucker & Heath 1994, Haney & MacDonald 1995).

There is growing concern in the circumpolar Arctic that the Ivory Gull may be in decline. The most recent information on population trend of Ivory Gulls exists for Canada, Svalbard and Russia. In Canada, the Ivory Gull has a highly restricted range, breeding exclusively in Nunavut Territory. Until recently, the Canadian Arctic was thought to support 20-30% of the entire global breeding population, and colonies of continental and global importance. However, annual aerial surveys conducted in 2002-2006 suggest that the Canadian breeding population has declined by 80–85% since the early 1980s; a decline from 2450 breeding pairs down to 500 breeding pairs. There are fewer extant Ivory Gull colonies in the Canadian Arctic when compared to the 1980s, and of those colonies that still exist, they support fewer birds (Gilchrist and Mallory 2005; Robertson et al 2007).

In Svalbard, the breeding population has been thought to be in decline during the last century (Birkenmajer 1969, Bakken & Tertitski 2000). Large colonies in the north-eastern part of the archipelago have not been occupied for decades, and few new colonies have been discovered. Surveys conducted in 2006-2007 confirm that few of the known colonies are still being used, and those colonies that still exist, support fewer birds (Strøm et al, in press. The total population is smaller than previously estimated, but the population decline is difficult to assess at this time as the historical data are scarce and fragmented.


D. Boertmann

Surveys conducted in the Russian Arctic in 2006 and 2007 indicate stable populations in some key colonies and no signs of a general decline, but rather considerable annual fluctuations in the numbers of breeding birds.

Despite wintering in association with pack ice in the north Pacific and Atlantic oceans, and its remote and inaccessible breeding locations, there are several threats to Ivory Gulls. These include climate change that is known to be altering ice conditions in the circumpolar Arctic, toxic pollutants that bio-accumulate at high trophic levels, shooting, oiling at sea, gold mining, and diamond exploration and drilling activities (in Canada).

Mark Mallory

Chapter 2: Ecology of the Ivory Gull

Species Information

The Ivory Gull is a medium-sized gull, length 40-43 cm, weight 450-700g, approximately 10% larger and longer- but broader-winged than the Black-legged Kittiwake Rissa tridactyla (Cramp & Simmons 1983). It is distinctive at all ages, but is particularly striking in its pure white adult plumage. Immature birds have a dusky face, and black spots on the breast and flanks, tips of the primaries, and tail and outer wing coverts (Grant 1986), although the extent of speckling is highly variable among individuals. The eye is dark (Cramp & Simmons 1983) and has an orange to red orbital ring in adults (Volkov & de Korte 2000). It exhibits a short period of immaturity for a gull of its size, acquiring adult plumage in its second winter. In adults, the bill is generally slate blue at the base, becoming pale yellow and tipped with red, but is darker in juveniles. The Ivory Gull has relatively short legs, which are black at all ages. Its round chest and head, short legs, and rolling gait give it a pigeon-like appearance when on the ground. However, it is graceful and agile in flight. Overall, the sexes are similar in appearance, and, once maturity is reached, there is little or no seasonal variation in characteristics. Currently, there is no information on population structure within its circumpolar range. Thus, the global population is considered panmictic at present (Haney & MacDonald 1995), although there are indications that some population structure may exist among the Canadian colonies (Stenhouse et al 2004).

Distribution

Unlike most other Arctic-breeding seabirds, Ivory Gulls spend the entire year at high latitudes, where they rarely range far from sea ice. The Ivory Gull has patchy breeding distribution across the High Arctic. Small, scattered colonies occur in Arctic Canada, Greenland, Svalbard, and the northern islands of Russia in the Barents and Kara seas (Fig. 1).

Grant Gilchrist

The wintering distribution of the Ivory Gull is poorly known. They generally winter among pack ice in the waters of the North Atlantic Ocean (Davis Strait and Labrador, Greenland and Barents seas), and the North Pacific Ocean (Bering Sea, Sea of Okhotsk, and perhaps Beaufort and Chukchi seas), or at persistent areas of polynyas (Haney & MacDonald 1995).

Canada

In Canada, the Ivory Gull has a restricted range, breeding exclusively in Nunavut Territory. Ivory Gulls nest in close proximity to areas of ocean that are partially free of ice in late May and early June; presumably areas that provide them with a reliable marine food source (Haney & MacDonald 1995). Consequently, colonies are found concentrated around Jones and Lancaster sounds, with colonies occurring on south-eastern Ellesmere Island, eastern Devon Island, and the Brodeur Peninsula of northern Baffin Island. One outlying colony exists farther west on Seymour Island, off the northern coast of Bathurst Island. The Seymour Island colony is associated with the Penny Strait Polynya (Mallory & Gilchrist 2003). The winter distribution in the eastern Atlantic occurs among the pack ice of Davis Strait, the Labrador Sea, Strait of Belle Isle, and northern Gulf of St. Lawrence. Occasionally, Ivory Gulls are seen along eastern coasts of Newfoundland and Labrador, particularly the Northern Peninsula of Newfoundland, and on the Lower North Shore of Québec. In the western Atlantic, it probably winters just south of Arctic pack ice.

Greenland

In Greenland Ivory gull colonies are only found in East and North Greenland while it is a widespread winter visitor in West Greenland. There are 8 colonies where Ivory gulls were present and numbers estimated at the last visit which took place between 1978 and 2004 (based on National Environmental Research Institute and the Greenland Institute of Natural Resources Seabird Colony Database updated in 2007). Based on the number of individuals recorded, the colonies probably support 400-500 potential breeding pairs in total. In addition there are 5 uncounted potential colonies where Ivory gulls have been observed, mostly from aircraft, and two uncounted colonies were unoccupied when last visited in 2003 and 2004 respectively. The largest colony lies on the low islands Henrik Krøyer Holme at 80 deg N and was estimated at 285 broods in 2003 (O. Gilg pers. comm.). Some of the small colonies occur on steep cliffs and nunataqs up to 60 km from the sea. Undiscovered colonies may exist in East Greenland. However, it is less likely that there are undiscovered colonies in West or Northwest Greenland (Qaanaaq and Upernavik municipalities).

Alexey Lokhov

Norway

In Norway (i. e. Svalbard) the Ivory Gull breeds in small numbers on Spitsbergen, Nordaustlandet, Barentsøya and Kong Karls Land, with the largest numbers occurring in the northern and eastern areas (Strøm 2006). Based on surveys conducted in 2006 and 2007 the breeding population is estimated at 350-500 pairs (Strøm & Gavrilo in press). Although

few in numbers, the Ivory Gull is a common species in ice-filled waters around the archipelago throughout the year. It appears regularly in small numbers in the settlements on Spitsbergen, often at rubbish dumps or at sewage outlets. The migration pattern of the Svalbard population is insufficiently known. They are thought to move just south of the permanent, multi-year pack ice and forage along the ice edge outside the breeding period. The first Ivory Gulls are usually observed in Svalbard around the settlements in March, and the birds disperse into the breeding areas in May. Ivory Gulls probably leave the colonies soon after the young fledge in August-September (Strøm 2006).

Russia

In Russia the Ivory Gull breeds on high Arctic islands of the Barents and Kara seas including Victoria Island, Franz Josef Land and Severnaya Zemlya archipelagos, and small islands in the NE Kara Sea (Yudin & Firsova 2002, Gavrilo & Bakken 2000, Strøm & Gavrilo , in press). Single pairs have been found breeding on the northern tip of Novaya Zemlya. While at sea in summer and autumn Ivory Gulls can be observed in the ice-covered waters of Russian Arctic and northwards in the Arctic Ocean. In spring birds first appear at breeding grounds in March – April. Adult birds can be observed at nearby wintering grounds until mid-June. Wintering grounds are known to occur in the Bering Sea and the Sea of Okhotsk (Kosygin 1985, Trukhin & Kosygin 1987, Yudin & Firsova 2002), and occasionally south to Japan and China. Some gulls may stay in polynyas and along ice edges in the White and Barents seas (Smirnov 1926, Matishov 2006).

Dispersal/migration post-breeding

Ivory Gulls are known to leave their colonies immediately after breeding and disperse to offshore foraging zones (Haney & MacDonald 1995). They generally move just south of permanent pack ice and forage along ice edges (Renaud & McLaren 1982). However, the timing and scale of these movements is highly dependent on inter-annual changes in the extent, location, and movement of sea ice (Haney & MacDonald 1995). Part of the population undertakes long latitudinal migration from their breeding grounds in north Barents-Kara Sea region east to the Bering Sea and Sea of Okhotsk (Tomkovich 1990). Recent studies of Ivory Gull migration employing the use of satellite telemetry confirm a bi-directional circumpolar migration pattern for Ivory Gulls breeding in the northern Barents Sea (Strøm & Gavrilo, in press). After breeding was completed on Svalbard and Franz-Josef Land, gulls remained in the marginal ice zone from August to October. Some of the birds explored areas far into the drifting ice along the system of leads and openings in the pack ice. All the ivory gulls first moved eastwards after breeding. During the last days of October and November birds performed a southern sub-latitudinal migration along the ice edge both eastwards and westwards. Birds both from Svalbard and Franz Josef Land share the same two wintering grounds principally located in the Davis Strait in the east and the Bering Sea in the west (Strøm & Gavrilo, in press).

Population Trends

The current total global population of the Ivory Gull is


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Table 1. Ivory Gull population estimates and trends

Country	Region	Historical estimate	Historical survey period	Current estimate	Recent survey period	No. of occupied colonies	Population Trend
Canada	Seymour Island	170 pairs	1970-early 1980s	60-71 pairs	2004-2006	Stable	Decline
	Baffin Island	280-290 pairs	1970-early 1980s	0-26 pairs	2004-2006	Decline	Decline
	Ellesemere/ Devon Islands	450 pairs	1970-early 1980s	225 pairs	2004-2006	Decline	Decline
Greenland	East and North coasts	Unknown		400-500 pairs	1978-2004	Uncertain	Uncertain
Norway	Svalbard	Unknown		350- 500 pairs	2006, 2007	Decline	Declined since 1900. After 1970 trend uncertain.
Russia	Victoria Island	100-750 pairs	1960s-1995	0 pairs	2001, 2004, 2006	Decline	Decline
	Franz Josef Land	Few 1000 birds	1980s	> 1000 pairs	2006 – 2007	Stable	Fluctuating, no trend
	Severnaya Zemlya	Unknown		min 2000	2007	Stable	Fluctuating, no trend
	Sedov Archipelago	Ca. 100 – 1100 pairs	19311996	1890–2000 pairs	2006–2007	Stable	Fluctuating, no trend
	Vize Island, Kara Sea	180 pairs	1996	200–1000 pairs	2005 –2007	Stable	Fluctuating, no trend
	Troinoy Island, Kara Sea	100–800 pairs	1992–1995	> 200 pairs	2006	Stable	Fluctuating, no trend
	Other islands of the Kara Sea	Unknown		Unknown		Unknown	Unknown
Global estimate		**14000 pairs**	**1996**	**8000 - 11500 pairs**	**2008**		

estimated to be approximately 6,325-11,500 breeding pairs (Table 1). Most breeding birds occur at colonies in Arctic Russia, (approx. 86 % of the global population). The population in Canada has declined since the 1980s. In Norway (Svalbard) the population probably declined in the first part of last century. After 1970 the trend is uncertain. Population trends in Greenland are unknown due to sparse historical information.

Canada

The North America distribution appears to have been decreasing since the late 1980s (Haney & MacDonald 1995, Gilchrist & Mallory 2005, Robertson et al. 2007). The largest known Ivory Gull colony in Arctic Canada is on Seymour Island. Today only one active colony exists on Devon Island, and there are none active south of Makinson Inlet on south-eastern Ellesmere Island (Robertson et al. 2007). Considerably fewer colonies now exist on the western side of the Brodeur Peninsula, with none in the area of Jackson Inlet; an area that supported three colonies in the 1980s (Reed & Dupuis 1983; Gilchrist & Mallory 2005). In 2006, 850 Ivory Gulls were counted during an aerial survey of all known nesting colonies, including colonies discovered for the first time.

Greenland

The population trend is unknown in Greenland due to limited historical data of these remote colonies. However, the sparse data do not indicate major population changes in recent decades.

Norway

In Svalbard the largest numbers occur in the northern and eastern areas. Although rare, the Ivory Gull is a common species that occurs in ice-filled waters around the archipelago all year. In Svalbard, the breeding population has been thought to be in decline during the last century (Birkenmajer 1969, Bakken & Tertitski 2000). Large colonies in the north-eastern part of the archipelago have not been occupied for decades, and few new colonies have been discovered. Surveys conducted in 2006-2007 confirm that few of the known colonies are still being used, and those colonies that still exist support fewer birds (Strøm & Gavrilo, in press). Although new colonies have been found, the total population is smaller than previously estimated. For Svalbard the population decline is difficult to assess at this time as the historical data are scarce and fragmented.

Russia

Including historical records, fifty colonies have been recorded including historical records, with breeding numbers ranging from 1 pair to almost 2000 pairs (Gavrilo & Strøm 2004, Gavrilo at al. 2007). Little data on population trends exist. The longest time series dates back to 1930, and is from the Sedov Archipelago (Severnaya Zemlya) in the eastern Kara Sea. Breeding population numbers there have fluctuated between a few dozen pairs and many hundred pairs, without any evident trend demonstrated (Volkov & de Korte 1996, 2000, Gavrilo et al. 2007). Another population time series occurs from the Kara Sea as well, and is from Vize Island where population numbers fluctuate within 120 – 100 pairs during 1990s – 2007 (Volkov & de Korte 2000, Lunk & Joren 2007, Strøm & Gavrilo in press). The number of breeding pairs and breeding success seems to be strongly dependent on ice conditions in the vicinity of the colony during both the pre-breeding and breeding season.


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Surveys of 13 out of 50 known breeding colonies conducted in 2006 and 2007 gave a minimum estimate of 4500 breeding pairs. However, although the most important (known) breeding colonies were surveyed in both years, several historical breeding sites as well as other potential breeding habitats remained un-surveyed. Thus the number of 4500 pairs that was estimated in 2007 does not reflect a complete population survey nor a minimum estimate of the Russian breeding population.

In the Russian Arctic, most key colonies are apparently still inhabited. Exceptions occur on Victoria Island, between Franz Josef Land and Svalbard. Here, numbers of Ivory Gulls fluctuated between 100 – 750 pairs during the period between the 1960s–1995 (Govorukha 1970, Orlov 1979, Vuilleumier 1995) while no breeding birds were observed in this region in 2001, 2004, and 2006 when sea ice was scarce or absent in the area during the breeding season (Øien 2004, Lunk & Joern 2007, Gavrilo at al. 2007).

Habitat Requirements

The Ivory Gull breeds in colonies on steep cliffs and nunataks inland, or on flat gravel-covered, areas near coasts. Like other seabirds breeding in the Arctic, Ivory Gulls have simple but critical habitat requirements. Specifically, they require breeding sites that are safe from terrestrial predators. They also nest within close proximity (20-100km) of open ocean early in the breeding season. They may also require the presence of ice-filled waters within 20 – 100 km of colonies to forage during incubation and chick rearing periods. Collectively, these factors restrict their possible breeding locations in the Arctic. Colonies established on flat ground often contain the highest numbers of nests, sometimes several hundred pairs, whereaas colonies on cliffs or nunataks normally do not exceed 20-100 pairs.

Unlike most other Arctic-breeding seabirds, Ivory Gulls spend the entire year at high latitudes where they rarely range far from sea ice. They generally winter among pack ice or at persistent open water areas of polynyas (Haney & MacDonald 1995). They are often associated with the edge of ice floes and leads in pack ice, where they feed on small fish and invertebrates near the surface (Divoky 1976). They also scavenge carrion on the ice (Haney & MacDonald 1995). The fact that they winter in sea ice at high latitudes in the Arctic, North Atlantic and Pacific oceans and often at low densities, makes it difficult to study their marine ecology in winter.

Biology

Life cycle and reproduction

Ivory Gulls are thought to first breed after their second year, based on the fact that they acquire adult plumage in their second winter, and that individuals in less than full adult plumage are rarely seen at

breeding colonies (Haney & MacDonald 1995). Unlike most gulls, which regularly lay 3 eggs, the Ivory Gull usually lays 1–2 eggs, more rarely 3 eggs. This could limit their potential for population stability and growth (Haney & MacDonald 1995). For example, Ivory Gulls failed to breed at all on Seymour Island in 2002 for unknown reasons (Mallory & Gilchrist 2003). The similar situation was observed on Graham-Bell Island in 1981 (Tomkovich 1986), in which poor food resources was assumed to be responsible for this failure.

Predation

Arctic Foxes Alopex lagopus are well-known nest predators, and will prey on the eggs and chicks of Ivory Guls; particularly those nesting on flat ground (MacDonald 1976). Ivory Gulls usually nest in areas where Arctic foxes are rare. Polar bears (Ursus maritimus) will take eggs and young on occasion (Haney & MacDonald 1995), and in some colonies this could be a significant recurring problem (MacDonald 1976). In the Russian Arctic, stray dogs visit colonies located nearby local settlements and may prey upon Ivory Gull eggs and chicks (Volkov & de Korte 1996, Strøm & Gavrilo in press). Avian predators such as Glaucous Gulls Larus hyperboreus, Artic Skuas Stercorarius parasiticus, Pomarine Skuas Stercorarius pomarinus, Snowy Owls Nyctea scandiaca, and Common Ravens Corvus corax are known to depredate the eggs and young of Ivory Gulls, but little is known about the frequency of these events or their population-level effects. Cannibalism has been observed in which Ivory Gulls take eggs from unguarded neighbour's nests. It is thought that Ivory Gulls may ingest their own eggs under very poor feeding conditions (Tomkovich 1986).

Diet and physiology

Like most gulls, the Ivory Gull is an opportunistic feeder. At sea, it is a surface-feeder depending on sympagic fauna, and forages primarily on small fish, such as juvenile Arctic cod Boreogadus saida and Lanternfish Myctophidae, and macro-zooplankton, such as amphipods and euphausiids (Haney & MacDonald 1995, Gjertz et al. 1985) and cephalopods (de Korte 1972). Ivory Gulls are also scavengers of marine mammals killed by Polar bears, and are reported to forage on marine mammal faeces and placentae (Haney & MacDonald 1995). On land they are known to feed on human waste and may take insects, seeds, and small mammals (Bent 1921). It is well established that seabirds that live at high latitudes have much higher metabolic rates and daily energy expenditure than expected based upon allometric equations of birds. Only one Ivory Gull has been measured, but in this individual, resting metabolic rate (RMR) was 190-220 % of the predicted values for arctic seabirds (Gabrielsen & Mehlum 1989).


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Interspecific interactions

Ivory Gull colonies are generally small and isolated, so the opportunity for interaction with other species is limited. It is assumed that Ivory Gulls nest in remote locations, often 20–30 km inland, to avoid interactions with species that could prey on their eggs and chicks (Haney & MacDonald 1995). For example, the intensity of their response toward predators, such as Arctic Foxes, at colonies appears to be weak (Day et al. 2001). Ivory Gulls typically nest in monospecific colonies. However there are documented cases of

Ivory Gulls breeding within mixed seabird colonies, together with Kittiwakes Rissa tridactyla, Glaucous Gulls Larus hyperboreus, Black Guillemot Cepphus grylle, Common Eider Somateria mollissima and Arctic Terns Sterna paradisaea (Vuilleumier 1995, Volkov & de Korte 1996, Volkov & de Korte 2000, Strøm & Gavrilo in press.).

Little is known about Ivory Gull behaviour and ecology away from the colony. They appear to be relatively solitary at sea or occasionally form small groups of 20–30 individuals (Cramp & Simmons 1983), sometimes in association with other seabirds (e.g. Black-legged Kittiwakes and skuas (MG pers. obs.).

Alexey Lokhov

Chapter 3: Factors affecting Ivory Gull populations

Natural predation

It is believed that Ivory Gulls nest in remote and inaccessible locations to avoid avian and mammalian predation of their eggs and chicks, e.g. Glaucous Gulls and Arctic Foxes (Haney & MacDonald 1995). The response of Ivory Gulls towards Arctic Foxes at colonies appears to be relatively weak (Day et al. 2001, Stenhouse et al. 2004). Consequently, they appear vulnerable to factors that increase the number of predators near their colony locations.


Maria Gavrilo

Survival, reproduction and productivity

Ivory Gulls have a relatively low adult survival rate (0.86) compared with other gulls (Stenhouse et al. 2004), and are likely to experience high post-fledging mortality (Haney & MacDonald 1995). Ivory Gulls reach sexual maturity and are believed to breed for the first time when they are 2-3 years old, although data are lacking (Haney & MacDonald 1995). They also show a relatively low productivity rate, with a normal clutch size of 2 eggs, compared with the usual 3-egg clutch seen in most other gulls. Furthermore, one study suggests that mean clutch size may be reduced in Ivory Gulls during years when there is less pack ice near colonies (Dalgety 1932).

Harvest of the Ivory Gull

Recent analysis of Ivory Gulls banded in Canada indicates that Ivory Gulls may be at some risk of mortality due to hunting. Canadian Inuit are permitted to harvest Ivory Gulls pursuant to their Land Claim Agreements, but this is rarely done. Residents of west Greenland apparently have shot Ivory Gulls occasionally during migration. This is despite the fact that Ivory Gulls have been fully protected in Greenland since 1978. At that time existing hunting regulations were changed so that a species without a specified open hunting season was fully protected by law (A. Mosbech, pers com). The degree to which Ivory Gulls are shot in Greenland is thought to have declined since the 1970s and is now apparently a rare incident (A. Mosbech, pers com.).

In some colonies on Russian breeding grounds Ivory Gulls are subject to egging. It is not legally permitted since the Ivory Gull is Red-listed in Russia. This practice used to be more common during the twentieth century whereas it now only occurs among local people who live under isolation on remote islands. The impact of egging is not known but harvest and related disturbance has not resulted in colony extirpation at these historical nesting locations (Volkov & Gavrilo pers. com.).

Disturbance

Industrial activities - In general, Ivory Gulls are most vulnerable to industrial activities during breeding (but see, Oil pollution and toxics, below), although this is rare due to their isolated breeding locations. In Canada, industrial activities now pose a considerable threat to Ivory Gulls nesting on the Brodeur Peninsula of Baffin Island. There, intensive diamond exploration


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has been ongoing since 2002. Activities include the placement of fuel caches (>400 barrels annually), gravel landing sites for fixed wing air craft, seasonal camps, and an increasing number of test drilling sites. Collectively, these activities must generate substantial air transport activity in the region during summer. Breeding Ivory Gulls can apparently tolerate some human disturbance since they can nest in close proximity to people (as observed in the Russian Arctic on several islands). The largest and most stable Ivory Gull colony in Russia is located within 2.5 km of a settlement which maintains an airstrip. In other places, breeding colonies are known to exist for many years within a few hundred meters to 1–2 km of polar research stations. However, the magnitude of geological and industrial activity in Russia could be a threat to nesting Ivory Gulls (i.e. gold mining in the Severnaya Zemlya Archipelago). Haney & MacDonald (1995) suggested that colonies were quite sensitive to disturbance.

Research and monitoring activities

Efforts to monitor the number of nesting Ivory Gulls in a region necessitates their visitation by researchers (typically by air craft). Although researchers often have experience mitigating their activities around nesting birds (e.g. surveying when birds have completed laying and are typically less susceptible to desert their nests), the response of Ivory Gulls to colony visitation should also be considered. The activity of researchers near colonies has the potential to lead to cannibalism of eggs in their own and neighbouring nests, and increased predation by other birds. In all countries, visitation of Ivory Gull colonies requires research permits and scientists must follow strict guidelines to avoid these impacts.

Toxic pollutants

Ivory Gulls are top predators and scavengers, and may be at risk of exposure to biomagnifying contaminants. Due to their high metabolic rates, Ivory Gulls exhibit high energetic requirements and, therefore, have a greater potential for the bioaccumulation of persistent organic pollutants than other species (even when compared to marine mammals; see Fisk et al. 2001). For example, Ivory Gulls collected in the Northwater Polynya of northern Baffin Bay in summer had higher loads of a range of persistent organic pollutants, such as organochlorines and PCBs, than Herring Gulls Larus argentatus collected from Lake Ontario, Canada (Fisk et al. 2001). Eggs of Ivory Gulls recently collected in Svalbard, Franz Josef Land and the Severnaya Zemlya have shown high levels of persistent organic pollutants (POPs) including DDT; levels that are comparable with those of Glaucous Gulls Larus hyperboreus from Bear Island (Miljeteig et al. 2007).

Furthermore, the levels of several POPs in the eggs of Ivory Gulls collected from Seymour Island all increased between 1976 and 1987 (Braune et al 2007). In contrast, those pollutants found in three other Arctic seabird species declined during that same period (Noble 1990; Elliott et al. 1992; Buckman et al. 2004).

Mercury was also measured in archived and recent collections of eggs of Ivory Gulls from Seymour Island, Canada. Concentrations of total mercury in Ivory Gull eggs increased between 1976 and 2004 to levels which are now among the highest ever reported for Arctic seabird eggs (Braune et al. 2006). Current levels of total mercury in some Ivory Gull eggs exceed threshold levels reported to affect reproductive success in birds, suggesting that mercury may be a factor contributing to the population decline of Ivory Gulls in the Canadian Arctic. However, the mercury concentration in eggs collected from the Russian Arctic were considerably lower than reported among Ivory Gull eggs from the Canadian Arctic (Miljeteig et al. 2007).

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Oil pollution

Chronic oil pollution is a serious conservation concern in Atlantic Canada, where about 300,000 murres mostly Thick-billed Uria lomvia and Dovekies (Alle alle) are killed every winter (Wiese et al. 2004). Mortality estimates are not available for other species due to smaller numbers of corpses found and/or an imprecise knowledge of their wintering range. However, well over 20 species, including a number of gull species, have been found oiled on the beaches of Newfoundland (Piatt et al. 1985, Wiese and Ryan 2003). Gulls are also considered to be vulnerable to oil pollution (Camphuysen 1998).

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The Ivory Gull, which is more pelagic in ice-filled waters than most other gull species, could be particularly vulnerable (Gavrilo et al. 1998). Currently, incidences of oiled Ivory Gulls have not been documented, but given the offshore range of this species along eastern Canada, oiled Ivory Gulls would not be expected to reach land and/or be recovered. The quantitative impact of oil pollution on Ivory Gulls wintering in Newfoundland and Labrador are not known, but there is every reason to believe that Ivory Gulls are at risk from oil pollution at sea in this region as well as in the Sea of Okhotsk where the oil industry is expanding. Development of offshore petroleum industry in polar waters is a potential risk for the gulls at their breeding areas taking into account northwards shift of industrial activity and shipping routes under changing climate and sea ice conditions.

Climate change

In arctic regions, considerable data now suggest that sea-surface temperatures, sea-ice thickness, and sea-ice distribution are changing (e.g., Parkinson et al. 1999; Grumet et al. 2001). The distribution of sea-ice and the duration of the open water season are critically important to the annual cycle of Arctic marine wildlife (Stirling 1997), and thus changing sea-ice conditions are expected to have a variety of effects on marine birds and other biota. Indeed, some studies have found that reproduction in polar marine birds varies in response to annual ice conditions (e.g., Gaston and Hipfner 1998; Barbraud and Weimerskirch 2001; Jenouvrier et al. 2003, Gaston et al. 2005). Recent evidence also indicates that conditions on North Atlantic wintering grounds of Thick-billed Murres (Uria lomvia), which may be similar with that of the Ivory Gull, can influence the numbers of birds returning to breeding colonies synchronously, even though breeding colonies may be distant from each other and experience different climatic conditions during the murre breeding season (Gaston 2003).

Given the Ivory Gull's strong and year-round association with pack ice, it is possible that some large-scale ecological perturbation, such as a change in the extent or thickness of ice cover, has caused a serious degradation of their foraging and wintering habitat in Baffin Bay and Davis Strait. No data exists to establish a causative relationship, however, and further studies on the potential effect of decreasing sea ice on Ivory Gulls are required.

Chapter 4: Management Issues and Actions

Non-consumptive use

Objective

Encourage non-consumptive use of Ivory Gulls that do not threaten their populations and ensure that non-consumptive use of Ivory Gulls is sustainable.

Action

- Evaluate risks to breeding Ivory Gulls from tourism and other human activities.
- Prepare guidelines for tourist operators to minimize their impacts on Ivory Gulls.
- Work to support education and/or enforcement efforts in support of existing harvest regulations to prevent illegal harvest.

Commercial activities

Objective

Minimize adverse effects on Ivory Gulls from commercial activities.

Action

- Evaluate effects of commercial activity on Ivory Gulls.
- Prepare guidelines to industry operations to minimize their impacts on Ivory Gulls.

Habitat protection

Objective

Protect key habitat to ensure continued viability of Ivory Gull populations that depend on them.

Actions

- Prepare summary of protected areas containing important Ivory Gull habitats.
- Evaluate the Circumpolar Protected Areas Network (CPAN) and other mechanisms to protect habitats important to the Ivory Gull.
- Identify important Ivory Gull habitat areas still requiring protection and designate them under national and international systems of protected areas (e.g. Birdlife International system, Important Bird Areas).
- Identify and implement any additional protective mechanisms such as treaties, agreements, regulations, and policies needed to protect Ivory Gull habitats.

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Coordination and consultation

Objective

Ensure proper coordination with existing programs that affect Ivory Gulls, and encourage awareness of this Ivory Gull Strategy and broad participation in its implementation.

Actions

- Support other international and national Ivory Gull conservation initiatives.
- Review existing programs and plans that affect Ivory Gulls to assure proper coordination as plans develop to implement the Strategy.
- Enlist the support of people and groups that are interested in Ivory Gulls; especially local northern residents.
- Solicit evaluation of actions carried out under the Strategy by specialists in Ivory Gull biology and other relevant disciplines.
- Prepare periodic reports summarizing the status of Ivory Gull populations and accomplishments in Ivory Gull conservation.
- Ensure that Ivory Gull conservation projects include an educational component.

Research and monitoring

Objective

Provide reliable information about Ivory Gulls needed to implement the Strategy

Actions

- Develop a comprehensive research agenda for each population specifying what information is most needed, how it will be used, and which countries will be involved in doing the work.
- Develop a research agenda that determines whether distinct Ivory Gull populations exist in the circumpolar Arctic.
- For each major Ivory Gull breeding population, work to estimate population size, productivity, adult survival rates, and identify migration routes and wintering grounds.
- Collaborate with the Arctic Monitoring Assessment Program (AMAP) to study contaminants that may be causing mortality or reproductive problems with Ivory Gulls and seek ways to reduce their adverse impacts.
- Develop national and international monitoring plans for Ivory Gulls throughout the circumpolar Arctic.


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Chapter 5: Implementation Guidelines

Setting priorities

Guidelines

- Identify which actions are already being addressed, which actions deserve highest priority for new work, and which of these high priority actions require international collaboration.
- Give high priority to actions likely to reveal the causes of Ivory Gull declines or to reverse such declines.
- Among new work to be initiated under the Strategy, give high priority to helping establish international, national, or regional Ivory Gull monitoring programs.

Collaboration

Guidelines

- Each country should prepare a national implementation plan for the strategy giving special attention to international collaboration.
- Ensure the regional and local governments participate in developing a National Implementation Plan
- Enlist the participation of local residents and technical specialists at an early stage in deciding how to implement the Strategy.

Reporting

Guidelines

- Provide appropriate opportunities for communication between those involved in carrying out the Strategy.
- Report annually to CAFF summarizing actions taken or planned under the Strategy.

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